

In the Claims:

Claims 1-32 (canceled).

Claim 33 (currently amended): A composite structure in an IC chip, said composite structure comprising:

a first metal pad structure comprising a plurality of segments of a first interconnect metal, at least one of said plurality of segments of said first interconnect metal extending along at least one side of said first metal pad structure;

a first via pad structure below said first metal pad structure, said first via pad structure comprising a plurality of segments of a first via metal and a first plurality of dielectric fillers, each of said first plurality of dielectric fillers being situated between two of said plurality of segments of said first via metal, at least one of said plurality of segments of said first via metal being in contact with said at least one of said plurality of segments of said first interconnect metal ~~contacting said first interconnect metal~~, at least two of said plurality of segments of said first via metal being connected.

Claim 34 (previously presented): The composite structure of claim 33 wherein said first interconnect metal is selected from the group consisting of copper and aluminum.

Claim 35 (previously presented): The composite structure of claim 33 wherein said first via metal is selected from the group consisting of copper and tungsten.

Claim 36 (previously presented): The composite structure of claim 33 further comprising a second metal pad structure below said first via pad structure, said second metal pad structure comprising a second interconnect metal, said second interconnect metal contacting said first via metal.

Claim 37 (previously presented): The composite structure of claim 36 wherein said second interconnect metal is selected from the group consisting of copper and aluminum.

Claim 38 (previously presented): The composite structure of claim 33 further comprising a second metal pad structure below said first via pad structure, said second metal pad structure comprising a plurality of segments of a second interconnect metal and a second plurality of dielectric fillers, at least one of said plurality of segments of said second interconnect metal contacting said first via metal.

Claim 39 (previously presented): The composite structure of claim 38 wherein said second interconnect metal is selected from the group consisting of copper and aluminum.

Claim 40 (previously presented): The composite structure of claim 33 wherein said first plurality of dielectric fillers comprise a low-k dielectric.

Claim 41 (previously presented): The composite structure of claim 40 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.

Claim 42 (previously presented): The composite structure of claim 38 wherein said second plurality of dielectric fillers comprise a low-k dielectric.

Claim 43 (previously presented): The composite structure of claim 42 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.

Claim 44 (previously presented): The composite structure of claim 33 wherein said first metal pad structure is a bonding pad.

Claim 45 (currently amended): A method for fabricating a composite structure in an IC chip, said method comprising steps of:

fabricating a first via pad structure, said first via pad structure comprising a plurality of segments of a first via metal and a first plurality of dielectric fillers, each of said first plurality of dielectric fillers being situated between two of said plurality of segments of said first via metal, at least two of said plurality of segments of said first via metal being connected;

fabricating a first metal pad structure above said first via pad structure, said first metal pad structure comprising a plurality of segments of a first interconnect metal, at least one of said plurality of segments of said first interconnect metal extending along at least one side of said first metal pad structure, said at least one of said plurality of segments of said first interconnect metal being in contact with at least one of said plurality of segments of said first via metal~~said first interconnect metal contacting at least one of said plurality of segments of said first via metal.~~

Claim 46 (previously presented): The method of claim 45 wherein said first metal pad structure is a bonding pad.

Claim 47 (previously presented): The method of claim 45 wherein said first interconnect metal is selected from the group consisting of copper and aluminum.

Claim 48 (previously presented): The method of claim 45 wherein said first via metal is selected from the group consisting of copper and tungsten.

Claim 49 (previously presented): The method of claim 45 wherein said first plurality of dielectric fillers comprise a low-k dielectric.

Claim 50 (previously presented): The method of claim 49 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.

Claim 51 (currently amended): A composite structure in an IC chip, said composite structure comprising:

a first via pad structure comprising a plurality of segments of a first via metal, at least one of said plurality of segments of said first via metal extending along at least one side of said first via pad structure;

a first metal pad structure below said first via pad structure, said first metal pad structure comprising a plurality of segments of a first interconnect metal and a first plurality of dielectric fillers, each of said first plurality of dielectric fillers being situated between two of said plurality of segments of said first interconnect metal, at least one of said plurality of segments of said first interconnect metal being in contact with said at

least one of said plurality of segments of said first via metal contacting said first via metal,
at least two of said plurality of segments of said first interconnect metal being connected.

Claim 52 (previously presented): The composite structure of claim 51 wherein
said first via metal is selected from the group consisting of copper and tungsten.

Claim 53 (previously presented): The composite structure of claim 51 wherein
said first interconnect metal is selected from the group consisting of copper and
aluminum.

Claim 54 (previously presented): The composite structure of claim 51 further
comprising a second via pad structure below said first metal pad structure, said second via
pad structure comprising a second via metal, said second via metal contacting said first
interconnect metal.

Claim 55 (previously presented): The composite structure of claim 54 wherein
said second via metal is selected from the group consisting of copper and tungsten.

Claim 56 (previously presented): The composite structure of claim 51 further
comprising a second via pad structure below said first metal pad structure, said second via
pad structure comprising a plurality of segments of a second via metal and a second

plurality of dielectric fillers, at least one of said plurality of segments of said second via metal contacting said first interconnect metal.

Claim 57 (previously presented): The composite structure of claim 56 wherein said second via metal is selected from the group consisting of copper and tungsten.

Claim 58 (previously presented): The composite structure of claim 51 wherein said first plurality of dielectric fillers comprise a low-k dielectric.

Claim 59 (previously presented): The composite structure of claim 58 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.

Claim 60 (previously presented): The composite structure of claim 56 wherein said second plurality of dielectric fillers comprise a low-k dielectric.

Claim 61 (previously presented): The composite structure of claim 60 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.

Claims 62-68 (canceled).

Claim 69 (currently amended): A composite structure comprising:

a first via pad structure comprising a first via metal;

a first metal pad structure below said first via pad structure, said first metal pad structure comprising a plurality of segments of a first interconnect metal and a first plurality of dielectric fillers, each of said first plurality of dielectric fillers being situated between two of said plurality of segments of said first interconnect metal, at least one of said plurality of segments of said first interconnect metal extending along at least one side of said first metal pad structure, said at least one of said plurality of segments of said first interconnect metal being in contact with ~~contacting~~ said first via metal;

a second via pad structure below said first metal pad structure, said second via pad structure comprising a plurality of segments of a second via metal and a second plurality of dielectric fillers, at least one of said plurality of segments of said second via metal being in contact with ~~contacting~~ said first interconnect metal, at least two of said plurality of segments of said second via metal being connected.

Claim 70 (previously presented): The composite structure of claim 69 wherein said second via metal is selected from the group consisting of copper and tungsten.

Claim 71 (previously presented): The composite structure of claim 69 wherein said second plurality of dielectric fillers comprise a low-k dielectric.

Claim 72 (previously presented): The composite structure of claim 71 wherein said low-k dielectric is selected from the group consisting of porous silica, fluorinated amorphous carbon, fluoro-polymer, parylene, polyarylene ether, silsesquioxane, fluorinated silicon dioxide, and diamondlike carbon.